### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

# (19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 29 April 2004 (29.04.2004)

PCT

## (10) International Publication Number WO 2004/036861 A2

(51) International Patent Classification7:

H04L 27/26

(21) International Application Number:

PCT/BE2003/000178

(22) International Filing Date: 21 October 2003 (21.10.2003)

(25) Filing Language:

**English** 

(26) Publication Language:

English

(30) Priority Data:

02079374.1 10/364,294

21 October 2002 (21.10.2002) 10 February 2003 (10.02.2003)

- (71) Applicant (for all designated States except US): STMI-CROELECTRONICS N.V. [NL/NL]; WTC Schiphol Airport, Schiphol Boulevard 265, 1118 BH Schiphol Airport, Amsterdam (NL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): VANDERPERREN, Yves [BE/BE]; Vijf Bunderlaan 35, B-1150 Brussel (BE). DEHAENE, Wim [BE/BE]; Gemeentestraat 201, B-3010 Kessel-Lo (BE).
- (74) Agents: BIRD, William, E. et al.; Bird Goen & Co., Klein Dalenstraat 42A, B-3020 Winksele (BE).

- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

### Declaration under Rule 4.17:

of inventorship (Rule 4.17(iv)) for US only

#### **Published:**

without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHODS AND APPARATUS FOR SYNCHRONIZATION OF TRAINING SEQUENCES

(57) Abstract: A receiver and a method for receiving a signal comprising a carrier modulated with a known training sequence is described in which an estimate a carrier frequency offset is obtained from an autocorrelation signal by autocorrelation of the part of the received signal containing a known training sequence. The received signal is compensated with the frequency offset obtained to form a compensated received signal, and a timing reference for the received signal is obtained by cross-correlation of the compensated received signal with a known training sequence.